Remarks/Arguments:

Claims 1-25, 27 and 30 are canceled. Claims 26, 31, 32, 40 and 45 have been amended. No new material is introduced herein. Claims 26, 28-29 and 31-50 are pending.

Applicants acknowledge with appreciation the Examiner's finding that claims 34-37, 42-45 and 48-50 are allowed.

Claims 26, 32 and 40 have been rejected under 35 U.S.C. §102(e) as being anticipated by Ylitalo et al. (U.S. Pat. No. 6,788,661). The features of claim 30 have been incorporated into claims 26, 32 and 40. The rejection to claims 26, 32 and 40 are addressed in regard to the rejection of claim 30.

Claims 28-31, 33, 38-39, 41 and 46-47 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Ylitalo et al. in view of Fukagawa et al. (U.S. Pat. No. 6,529,745). Claim 30 has been cancelled. It is respectfully submitted, however, that the remaining claims are patentable over the cited art for the reasons set forth below.

Claim 26, as amended, includes features neither disclosed nor suggested by the cited art, namely:

...selecting an arbitrary beam width and an arbitrary beam direction for said pattern...

...calculating integral limits for estimating excitation coefficients of a linear array based on said selected beam width and beam direction...

...calculating said excitation coefficients...

...transforming said calculated excitation coefficients into excitation coefficients of a circular array...

...providing said antenna pattern... according to said selected arbitrary beam width and arbitrary beam direction...

...said antenna pattern is provided based upon said excitation coefficients of said circular array... (Emphasis Added)

Ylitalo et al. disclose a transmitter including controlled directional antennas to direct separate beams to a direct path and an indirect path to cover an angular spread (col. 5, lines 31-41). A phased array, such as in Fig. 7, may be used to provide a beam at several beam positions to scan for a direct path and an indirect path based on signal strength and direct beams to these locations (col. 7, line 1-30).

In an alternate embodiment, Ylitalo et al. disclose steering an antenna beam along a steering vector to generate an angular power spectrum at angular positions (col. 15, lines 49-53). Ylitalo et al. disclose that the steering vector may be computed along a curved path and that the antenna arrays may form a circle (col. 16, lines 49-57). When the angular power spectrum includes two sharp peaks, the base station selects two beams to point to respective angular directions for the two peaks (col. 18, lines 26-34) When the angular power spectrum is diffuse, beams are selected such that the sum of the beam widths for all beams approximately equals an angular spread (col. 18, lines 56-65). For example, a two beam base station selects a beam width for both beams to be about half of the angular extent (col. 19, lines 8-12). Ylitalo et al. disclose that zero weighting can be applied to a number of elements in the antenna array to adjust the apparent aperture to match the beam width to the angular spread (col. 19, lines 42-48).

Ylitalo et al. do not disclose or suggest Applicants claimed features of "selecting an arbitrary beam width and an arbitrary beam direction for said pattern... calculating integral limits for estimating excitation coefficients of a linear array based on said selected beam width and beam direction... transforming said calculated excitation coefficients into excitation coefficients of a circular array... said antenna pattern is provided based upon said excitation coefficients of said circular array..." (emphasis added). These features are neither disclosed nor suggested by Ylitalo et al. Ylitalo et al. disclose providing a number of beams for at least a direct and indirect path. Ylitalo et al. is silent on transforming excitation coefficients of a linear array based on a beam width and beam direction to excitation coefficients of a circular array.

Ylitalo et al. is discussed above. Fukagawa et al. disclose determining weighting coefficients for antenna elements using an estimated arrival direction to determine a beam direction. The beam forming section has a function for directing the radiation beam of the antenna to the direction of the mobile station (col. 4, lines 10-18). Fukagawa et al. do not disclose or suggest Applicants claimed features of "selecting an arbitrary beam width and an arbitrary beam direction for said pattern... calculating integral limits for estimating excitation

coefficients of a linear array based on said selected beam width and beam direction... transforming said calculated excitation coefficients into excitation coefficients of a circular array... said antenna pattern is provided based upon said excitation coefficients of said circular array..." (emphasis added). Fukagawa et al. does not disclose or suggest that the antenna pattern is a function of beam direction and beam width. Fukagawa et al. is silent on controlling a beam width of the array. Fukagawa et al. is silent on transforming calculated excitation coefficients of a linear array to circular array excitation coefficients. Thus, Fukagawa et al. do not make up for the features that are lacking in Ylitalo et al. Accordingly, allowance of claim 26 is respectfully requested.

Claim 28 includes all of the features of claim 26 from which it depends. Fukagawa et al. do not disclose that "the beam width and beam direction are determined from incoming radio waves estimated in relation to traffic conditions" as stated in paragraph 5 of the Office action. Fukagawa et al., in col. 3, lines 50-53, disclose that an array antenna "has a plurality of antenna elements for receiving radio waves transmitted from mobile stations." Fukagawa et al. do not make up for the features that are lacking in Ylitalo et al. Accordingly, claim 28 is patentable over the cited art.

Claims 29 and 31 include all of the features of claim 26 from which they depend. Fukagawa et al. do not make up for the features that are lacking in Ylitalo et al. Accordingly, claims 29 and 31 are patentable over the cited art.

Although not identical to claim 26, amended claim 32 includes features similar to amended claim 26 which are not disclosed or suggested in the cited art, namely:

...a calculator for establishing an antenna pattern corresponding to said plurality of antenna elements of said circular array antenna...

...by calculating excitation coefficients for a linear array antenna based upon an arbitrary beam width and an arbitrary beam direction...

...transforming said calculated excitation coefficients into excitation coefficients of a circular array antenna... (Emphasis Added)

Fukagawa et al. do not make up for the features that are lacking in Ylitalo et al. Accordingly, allowance of claim 32 is respectfully requested.

Claims 33 and 38-39 include all of the features of claim 32 from which they depend. Fukagawa et al. do not make up for the features that are lacking in Ylitalo et al. Accordingly, claims 33 and 38-39 are patentable over the cited art.

Claim 40 has been amended. Although not identical to claim 32, claim 40 includes features similar to amended claim 32 which are not disclosed or suggested in the cited art. Accordingly, allowance of claim 40 is respectfully requested.

Claims 41 and 46-47 include all of the features of claim of the features of claim 40 from which they depend. Fukagawa et al. do not make up for the features that are lacking in Ylitalo et al. Accordingly, claims 41 and 46-47 are patentable over the cited art.

In view of the amendments and arguments set forth above, the above-identified application is in condition for allowance which action is respectfully requested.

Respectfully submitted,

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LEA/bj

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Beth Johnson

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